

PATENT ABSTRACTS OF JAPAN

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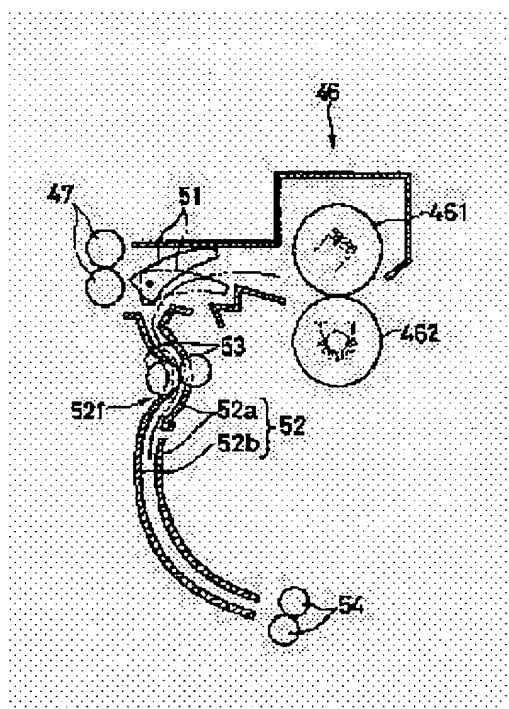
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(54) TRANSFER PAPER CURL STRAIGHTENING DEVICE FOR IMAGE FORMING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent the occurrence of a jamming of paper sheet by a method wherein a curl produced at a fixing part is straightened in a process guided to an intermediate stock part and reformed into a straight.

SOLUTION: In the middle of a turn-over paper guide 52 to guide a transfer paper to a double surface unit part from a direction switching plate 51 and in a spot of a conveyance roller pair 53, a curl straightening part 521 to straighten the curl of a transfer paper is formed. A curl straightening part 521 is formed in such a manner that a conveyance passage consisting of guide plates 52a and 52b is formed in a bent shape wherein the conveyance passage is bent at an acute angle or with a high curvature (in an arcuate shape or an oblong shape). Even when the transfer paper is bent at an acute angle, the conveyance roller pair 53 is provided in this position to source normal conveyance of a transfer paper.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the equipment which corrects curl of the transfer paper which is applied to image formation equipments which have the conveyance direction change means which changes the Trey Nakama section to the re-feed road side which it has on the way, and an exhaust passage side, such as a copying machine and a printer, especially is produced in the fixing section in the downstream of the fixing section established in the toner image imprinted by the transfer paper with which it was fed.

[0002]

[Description of the Prior Art] It once stocks in the Trey Nakama section within a body using a direction change means, without discharging this transfer paper, if a copy is performed on a front face in the image formation section when copying to both sides of a transfer paper in the copying machine in which a former and double-sided copy is possible, then, paper is re-fed from this Trey Nakama section, and it is made to copy to a rear-face side. In this case, the toner image of a manuscript side is imprinted by the transfer paper in the image formation section, and, subsequently this toner image is made to perform heat treatment which fuses a toner in the fixing section which consists of a heat roller and a ** roller, and is fixed to a transfer paper side.

[0003]

[Problem(s) to be Solved by the Invention] However, in the fixing section, if heat treatment is performed with a heat roller, it is known that a transfer paper will curl to a ** roller side in the case of the usual thickness. And when the transfer paper was sent to the Trey Nakama section through the re-feed way, curled, in the Trey Nakama section etc., conveyance or stock processing of a transfer paper could not be performed proper, but there was a possibility of generating the so-called paper jam etc. In the Trey Nakama section, since the transfer paper of two or more sheets is stocked in the shape of a laminating, it is superimposed on the curl condition of each transfer paper, and in case paper is re-fed for a rear-face copy, it is especially easy to generate a paper jam.

[0004] the process in which the curl which this invention was made in view of the above-mentioned technical problem, and was produced in the fixing section is led to the middle stock section -- setting right -- **** -- it is returning direct and aims at offering the transfer paper curl orthodontic appliance of the image formation equipment which prevents generating of a paper jam.

[0005]

[Means for Solving the Problem] In the image formation equipment which has the conveyance direction change means which changes the Trey Nakama section to the downstream of the fixing section established in the toner image imprinted by the transfer paper with which it was fed with this invention at the re-feed road side which it has on the way, and an exhaust passage side While a conveyance means is formed in re-feed **** between the above-mentioned direction change means and the above-mentioned Trey Nakama section, curl of the transfer paper with which the above-mentioned re-feed way was formed in the arrangement location of the above-mentioned conveyance means in the above-

mentioned fixing section, and the flection of hard flow are formed.

[0006] According to this configuration, in case the transfer paper led to re-conveyance **** passes the curl formed in the fixing section, and the flection crooked to hard flow, the curl is corrected disciplinarily. Moreover, since the conveyance means is formed in the formation location of this flection, a transfer paper passes this flection smoothly convenient in spite of high resistance of transfer paper conveyance by the flection.

[0007] In invention according to claim 2, since the above-mentioned flection made the radii configuration the guide plate of two sheets by which kept predetermined spacing and opposite arrangement was carried out and formed it, curl of a transfer paper is corrected using this radii configuration.

[0008]

[Embodiment of the Invention] The whole perspective view and drawing 2 which show 1 operation gestalt of the copying machine with which the transfer paper curl orthodontic appliance which drawing 1 requires for this invention was applied are the internal configuration Fig. A copying machine 1 consists of body of copying machine 1a, and manuscript installation section 1b arranged by the crowning, and body of copying machine 1a is equipped with the optical device 2, the image formation section 3 equipped with the photo conductor drum 31, the form conveyance device 4, the reversal device 5, and the double-sided unit section 6, and is formed.

[0009] Manuscript installation section 1b has the original-cover section which opens and closes the contact glass 1c page with which top-face opening of body of copying machine 1a was equipped, and sets a manuscript by manual actuation. In addition, as manuscript installation section 1b, it may be the upper part of contact glass 1c, and what used the automatic manuscript feed gear which carries in at a time one manuscript by which the laminating was carried out on contact glass 1c, sets to an exposure location, and is taken out after manuscript reading may be used.

[0010] The above-mentioned optical device 2 According to the 1st optical system 21 and the light source 211 which have the light source 211 and the reflecting mirror 212 which consist of a halogen lamp which scans the manuscript on contact glass 1c on the basis of home-position H.P at the time of **** It is the both-way direction (in drawing 2) about the 2nd optical system 22 which has two or more reflecting mirrors 221,222 which lead the manuscript image which it irradiated and was reflected in respect of the manuscript to the image formation section 3, the lens 23 which carries out image formation of the above-mentioned manuscript image to the 31st page of a photo conductor drum, and the 1st and 2nd optical system 21 and 22. It has the guide rail 24 of the pair guided for an arrow head showing, and the driving means of **** which makes it run the 1st and 2nd optical system 21 and 22 at a predetermined rate along with a guide rail 24, respectively. A reflecting mirror 223 leads the manuscript image which passed the lens 23 to the exposure location of the photo conductor drum 31.

[0011] It irradiates towards the manuscript set on contact glass, it is reflected in respect of a manuscript, and the light from the light source 211 obtains a manuscript image. After it is reflected with a reflecting mirror 212,221,222 among drawing as an alternate long and short dash line shows, and this manuscript image passes through a lens 23, it is led to the exposure location of the photo conductor drum 31 through a reflecting mirror 223.

[0012] The image formation section 3 equips the perimeter of the photo conductor drum 31 with the main live part 32, the development section 33, the toner recovery roller section 34, the imprint section 35, the separation section 36, and the cleaning section 37 from the upstream of the hand of cut while being equipped with the photo conductor drum 31 in which fixed-speed rotation is clockwise carried out by the driving means of ****. After homogeneity electrification of the photo conductor drum 31 is carried out by the main live part 32 in a front face, a manuscript image is exposed and an electrostatic latent image is formed. It is actualized by adhering a toner in the development section 33, and, subsequently to a transfer paper, this electrostatic latent image is imprinted in the imprint section 35. The transfer paper with which the toner image was imprinted is led to the fixing section 46 mentioned later, after dissociating from the photo conductor drum 31 in the separation section 36.

[0013] the form conveyance device 4 is formed in the lower location of body of copying machine 1a

removable, and while having two or more steps of sheet paper cassette C which contains the transfer paper of predetermined size in the state of a laminating, respectively, the double feed of the feed roller 411,412 which sends out one sheet of transfer paper at a time from the conveyance direction upstream, and the form to which paper was fed is prevented -- selling -- a roller pair -- 421,422 -- each -- the resist roller pair for conveyance roller pair 431-434 and secondary feeding -- it has 44. moreover, the conveyance belt 45 laid in the direction of a lower stream of a river of the photo conductor drum 31 between the rotation rollers 451,452 of a pair, the fixing section 46, and a discharge roller pair -- 47 and a paper output tray 48 are formed. the conveyance guide section 40 -- selling -- a roller pair -- the form with which it was fed from 42 -- a discharge roller pair -- it is for conveying to 47 and consists of plates by which opposite arrangement was carried out by having necessary width of face. that to which a detachable tray 49 enables the set of the transfer paper of necessary size by the manual -- it is -- the feed roller 413 -- and -- selling -- a roller pair -- it comes to have 423 and the conveyance guide section 40 is joined by the downstream. The fixing section 46 consists of an upper heat roller 461 and a lower ** roller 462, as for the heat roller 461, a heater is formed in the interior, and the ** roller 462 is pressed by the necessary pressure at the heat roller 461 side.

[0014] sheet paper cassette C or the transfer paper which it let out with the feed rollers 411-413 from the detachable tray 49 should pass each conveyance roller pair 431-434 -- a resist roller pair -- it is fed to 44. Synchronizing with the initiation timing of an exposure scan of the optical device 2, paper is secondarily fed to the transfer paper conveyed to resist roller pair 44, and it has a toner image imprinted in the imprint section 35. the transfer paper which had the toner image imprinted should pass the conveyance belt 45 -- the discharge roller pair after being conveyed by the fixing section 46 and fixing the transfer paper to the toner image here -- pass 47 -- it is discharged by the paper output tray 48.

[0015] the reversal device 5 -- the fixing section 46 and a discharge roller pair -- the conveyance guide section 40 between 47 -- on the way -- coming out -- it is -- the electromagnetism of **** -- a solenoid - - the circumference of a horizontal axis 511 -- a transfer paper -- a discharge roller pair -- with the rotation location drawn in the direction of 47 While having the direction change plate 51 switched to the rotation location drawn in the direction of the below-mentioned double-sided unit section 6 the conveyance roller pair in the middle of the reversal form guide 52 by which opposite arrangement was carried out in order to lead the transfer paper by which the direction change was carried out to the double-sided unit section 6, and the reversal form guide 52 -- the taking-out roller pair prepared in 53 and the down-stream edge of the reversal form guide 52 -- it consists of 54. the transfer paper by which the direction change was carried out at the double-sided unit section 6 side is caudad conveyed along with the reversal form guide 52 -- having -- a conveyance roller pair -- in the bend of the reversal form guide 52 with which 53 was prepared, the curl formed in the fixing section 46 sets right -- having -- as much as possible -- **** -- the condition of having been returned direct -- a taking-out roller pair -- it is led to 54.

[0016] The double-sided unit section 6 consists of the Trey Nakama sections 7 and the re-feed devices 8 for copying to both sides of a transfer paper which are and it has the unit section body 60. The Trey Nakama section 7 cooked the form to this upper part, and is equipped with the section 72, the nip roller 73, the form guide 74, and the rotor plate 75 that carries out self-weight fall, takes with migration of a form on a form side, and is carried out the surroundings while it is equipped with the form stock plate 71 which lays the reversed transfer paper. In addition, it is what the form guide 74 is formed only in a before [the fitting location of a rotor plate 75] side, and it is supported to revolve with the upper part, inclines back that it is also at a self-weight or few energization force to a lower part, and is contacted on the form stock plate 71. The transfer paper taken out from taking-out roller pair 54 was smoothly guided on the field of the form stock plate 71, and the stock mistake by the tip of a transfer paper colliding with a rotor plate 75 is prevented.

[0017] Moreover, while having the re-feed guide section 81 which consists of a plate by which opposite arrangement was carried out by forming the re-feed device 8 under the form stock plate 71, and having predetermined spacing It is laid between the re-feeding roller 82 which the re-feed direction of the form stock plate 71 is a front side a little, and was formed by exposing a part of up peripheral surface, the

reversal roller 83 of the front, and the rotation roller 841,842 of a pair. where the peripheral surface of the reversal roller 83 is contacted, it rotates to the re-feed direction and hard flow -- it sold, and necessary spacing was kept in the proper place of a belt 84 and the re-feed guide section 81, and it was arranged in it -- re--- it has feed roller pair 851-853, and is formed. Moreover, the sheet object 86 which has flexibility hangs in the form nip location where it sells and the rotation roller 841 and the reversal roller 83 of a belt 84 meet caudad from the unit section body 60, and it is attached in it after the lower limit has contacted the reversal roller 83.

[0018] In addition, it is the double-sided unit section's 6 consisting of body of copying machine 1a possible [a draw] at the front side, and replacing with a double-sided unit in this stowed position, making sheet paper cassette C slide from a front side, and loading, and it is also possible to consider as the three-step configuration of a sheet paper cassette. in this case, the feed roller 411 -- and -- selling -- a roller pair -- what is necessary is to constitute the part equivalent to 421 as a feed unit, and just to load with this feed unit in advance of insertion of sheet paper cassette C

[0019] If a transfer paper is sent on the taking-out roller pair form stock plate 71 from 54 It regulates direct. the curl which a form is cooked, and the section 72 rotates, presses down the back end side (the time of re-feed tip side) of a transfer paper from the upper part, and remains -- compulsory -- **** -- A nip roller 73 rotates in the re-feeding direction in this condition, a transfer paper is transported to the form nip location between the reversal roller 83 and the sheet object 86, and reservation and front end ***** of a nip condition are performed. The migration condition of a transfer paper is supervised by the rotary encoder of **** prepared in the rotation shaft of a rotor plate 75 etc. And sell and a belt 84 starts a rotation drive. if there are initiation directions of re-feed, i.e., rear-face copy actuation, in this condition -- the re-feeding roller 82 and the reversal roller 83 -- Cook a form and it lets out one sheet at a time sequentially from the lowest transfer paper according to the press operation from the upper part by the section 71. pass the re-feed guide section 81 -- it feeds to the location which joins the conveyance guide section 40 -- having -- after unification -- a conveyance roller pair -- 433 and a resist roller pair -- it is led to the photo conductor drum 31 by 44. the transfer paper with which the toner image was imprinted by the rear face -- a discharge roller pair -- pass 47 -- it is discharged by the paper output tray 48.

[0020] Drawing 3 is a sectional side elevation explaining the structure of the transfer paper curl correction section. the reversal form guide 52 to which a transfer paper is led to the double-sided unit section 6 from the direction change plate 51 -- on the way -- coming out -- it is -- a conveyance roller pair -- the curl correction section 521 which corrects curl of a transfer paper is formed in the part of 53.

[0021] These guide plates 52a and 52b are mutually countered crosswise at the necessary spacing, the reversal form guide 52 consists of guide plates 52a and 52b by which kept predetermined spacing and opposite arrangement was carried out, and the press contact of the each roller which constitutes conveyance roller pair 52 from these notching and which counters is [two or more notching is formed and] made to be carried out, respectively. and the conveyance way where the curl correction section 521 consists of these guide plates 52a and 52b -- the shape of an acute angle -- or it is formed in the crookedness configuration which had and bent big curvature (the shape of the shape of radii, or an ellipse). thus -- even if it makes a transfer paper crooked in the shape of an acute angle etc. -- this location -- a conveyance roller pair -- normal conveyance of a transfer paper is made to be secured by having considered as the configuration equipped with 53.

[0022] and decline in the location of the fixing section 46 by heat treatment for toner melting fixing in the fixing section 46 -- that is, he is trying to correct disciplinarily curl of the transfer paper (it curled) which bent in the ** roller 462 side That is, if a transfer paper is led to the curl correction section 521 of the reversal form guide 52, when a transfer paper passes through between this crooked both guide plate 52a and 52b, the residual stress inside the transfer paper produced in the fixing section 46 (force of making a transfer paper curling), and the force of hard flow will act on a transfer paper. consequently, a transfer paper -- **** -- it is sent to the double-sided unit section 6 in the condition of having been returned to the direct condition. Therefore, since it is sent on Trey Nakama 71 of the double-sided unit section 6 and nip processing is suitably performed also to the nip actuation to the form tip for re-feeding,

the transfer paper with which curl was corrected can prevent abnormalities in conveyance, such as a paper jam resulting from curl of a transfer paper, as much as possible, and its dependability of equipment improves.

[0023] in addition, a conveyance roller pair -- although 53 may be arranged so that it may become the conveyance direction mid-position of the crookedness configuration of the curl correction section 521, this invention is not limited to this physical relationship, but from the center of a crookedness configuration, may be the upstream a little a little, and is pressed with the roller which counters where a transfer paper is sagged in curl and the reverse sense by this, and can perform reservation of conveyance. moreover, the opposite roller for this curl correction -- a conveyance roller pair -- you may prepare independently [53]. Moreover, the configuration which consists of a conveyance belt which replaces with an opposite roller and meets one roller and this roller peripheral surface may be used.

[0024] Moreover, although the above-mentioned operation gestalt explained the Trey Nakama section 7 as an object for a double-sided copy, this invention is not limited to this but can be applied also to image formation equipment equipped with the Trey Nakama section 7 which enables the imprint of the image of two kinds of manuscripts on the surface of a transfer paper.

[0025]

[Effect of the Invention] While forming a conveyance means in re-feed **** between a direction change means and the Trey Nakama section according to invention according to claim 1 Since it considered as the configuration in which the curl of a transfer paper and the flection of hard flow which were formed in the arrangement location of the above-mentioned conveyance means of the above-mentioned re-feed **** in the above-mentioned fixing section were formed, while curl of the transfer paper formed in the fixing section is disciplinarily reformable In spite of high resistance of transfer paper conveyance by the flection, a flection can be smoothly passed for a transfer paper.

[0026] Since it considered as the configuration which made the radii configuration the guide plate of two sheets by which kept predetermined spacing and opposite arrangement was carried out in the flection, and formed it according to invention according to claim 2, curl of a transfer paper is reformable using this radii configuration.

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CLAIMS

[Claim(s)]

[Claim 1] In the image formation equipment which has the conveyance direction change means which changes the Trey Nakama section to the downstream of the fixing section established in the toner image imprinted by the transfer paper with which it was fed at the re-feed road side which it has on the way, and an exhaust passage side While a conveyance means is formed in re-feed **** between the above-mentioned direction change means and the above-mentioned Trey Nakama section, the above-mentioned re-feed way Transfer paper curl orthodontic appliance of the image formation equipment characterized by forming the curl of a transfer paper and the flecion of hard flow which were formed in the arrangement location of the above-mentioned conveyance means in the above-mentioned fixing section.

[Claim 2] The above-mentioned flecion is the transfer paper curl orthodontic appliance of the image formation equipment according to claim 1 characterized by making into a radii configuration the guide plate of two sheets by which kept predetermined spacing and opposite arrangement was carried out, and forming it.

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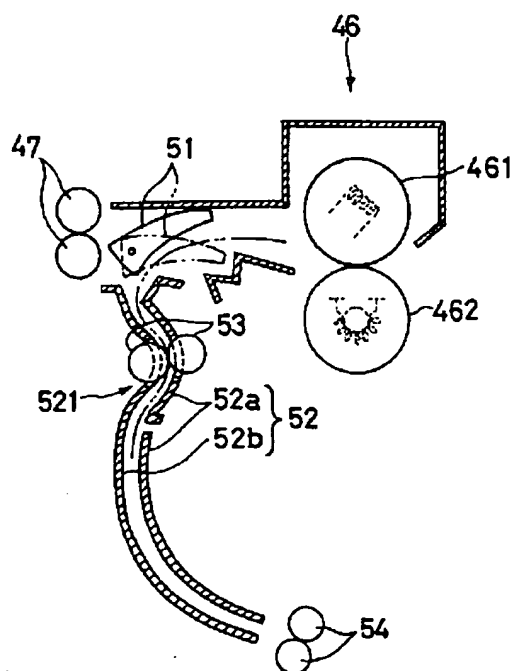
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(54) 【発明の名称】 画像形成装置の転写紙カール矯正装置

(57) 【要約】

【課題】 定着部で生じたカールを中間ストック部に導く過程で矯正し、真っ直に戻すことで、紙詰まりの発生を防止する。

【解決手段】 方向切換え板５１から両面ユニット部６に転写紙を導く反転用紙ガイド５２の途中であって、搬送ローラ対５３の個所には、転写紙のカールを矯正するカール矯正部５２１が形成されている。カール矯正部５２１は、ガイド板５２ａ、５２ｂからなる搬送路を鋭角状に乃至は大きな曲率（円弧状や楕円状）を有して折り曲げた屈曲形状に形成されている。このように転写紙を鋭角状等に屈曲させても、この位置に搬送ローラ対５３を備えた構成にして転写紙の正常搬送を確保している。



【特許請求の範囲】

【請求項1】 給送された転写紙に転写されたトナー像を定着する定着部の下流側に、中間トレイ部を途中に有する再給送路側と排出路側とに切り替える搬送方向切換え手段を有する画像形成装置において、上記方向切換え手段と上記中間トレイ部間の再給送路部に搬送手段が設けられるとともに、上記再給送路は、上記搬送手段の配設位置に、上記定着部で形成された転写紙のカールと逆方向の屈曲部が形成されていることを特徴とする画像形成装置の転写紙カール矯正装置。

【請求項2】 上記屈曲部は、所定間隔を置いて対向配置された2枚のガイド板を円弧形状にして形成したものであることを特徴とする請求項1記載の画像形成装置の転写紙カール矯正装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、給送された転写紙に転写されたトナー像を定着する定着部の下流側に、中間トレイ部を途中に有する再給送路側と排出路側とに切り替える搬送方向切換え手段を有する複写機やプリンタ等の画像形成装置に係り、特に定着部で生じる転写紙のカールを矯正する装置に関する。

【0002】

【従来の技術】従来、両面複写が可能な複写機では、転写紙の両面に複写を行う場合、像形成部で表面に複写が行われると、この転写紙を排出することなく、方向切換え手段を用いて、一旦本体内の中間トレイ部にストックし、次にこの中間トレイ部から再給紙して裏面側に複写を行うようにしている。この場合、転写紙には像形成部で原稿面のトナー像が転写され、次いで、このトナー像は熱ローラと圧ローラとからなる定着部でトナーを溶融して転写紙面に定着する熱処理を施すようにしている。

【0003】

【発明が解決しようとする課題】ところが、定着部において、熱ローラにより熱処理が施されると、転写紙は通常の厚さの場合、圧ローラ側にカールしてしまうことが知られている。そして、カールしたまま転写紙が再給送路を経て中間トレイ部に送られると、中間トレイ部等で、転写紙の搬送やストック処理が適正に行えず、いわゆる紙詰まり等を発生する虞れがあった。特に、中間トレイ部では複数枚の転写紙を積層状にストックするため、各転写紙のカール状態が重畳されて、裏面複写のために再給紙する際に紙詰まりが発生し易くなっていた。

【0004】本発明は、上記課題に鑑みてなされたもので、定着部で生じたカールを中間ストック部に導く過程で矯正し、真っ直に戻すことで、紙詰まりの発生を防止する画像形成装置の転写紙カール矯正装置を提供することを目的とするものである。

【0005】

【課題を解決するための手段】本発明は、給送された転

写紙に転写されたトナー像を定着する定着部の下流側に、中間トレイ部を途中に有する再給送路側と排出路側とに切り替える搬送方向切換え手段を有する画像形成装置において、上記方向切換え手段と上記中間トレイ部間の再給送路部に搬送手段が設けられるとともに、上記再給送路は、上記搬送手段の配設位置に、上記定着部で形成された転写紙のカールと逆方向の屈曲部が形成されているものである。

【0006】かかる構成によれば、再搬送路部に導かれた転写紙は、定着部で形成されたカールと逆方向に屈曲された屈曲部を通過する際に、そのカールが矯正的に矯正される。また、この屈曲部の形成位置には搬送手段が設けられているので、転写紙は、屈曲部による転写紙搬送の高抵抗にも拘らず、この屈曲部を支障なく円滑に通過する。

【0007】請求項2記載の発明では、上記屈曲部は、所定間隔を置いて対向配置された2枚のガイド板を円弧形状にして形成したので、この円弧形状を利用して転写紙のカールが矯正される。

【0008】

【発明の実施の形態】図1は、本発明に係る転写紙カール矯正装置が適用された複写機の一実施形態を示す全体斜視図、図2は、その内部構成図である。複写機1は、複写機本体1aと、その頂部に配設された原稿載置部1bとからなり、複写機本体1aは、光学機構2、感光体ドラム31を備えた像形成部3、用紙搬送機構4、反転機構5、および両面ユニット部6を備えて形成されている。

【0009】原稿載置部1bは、複写機本体1aの頂面開口に装着されたコンタクトガラス1c面を開閉する原稿押さえ部を有し、マニュアル操作で原稿をセットするようにしたものである。なお、原稿載置部1bとして、コンタクトガラス1cの上部であって、積層された原稿を1枚ずつコンタクトガラス1c上に搬入して露光位置にセットし、原稿読み取り後に搬出する自動原稿送り装置を用いるようにしたものでもよい。

【0010】上記光学機構2は、コンタクトガラス1c上の原稿をホームポジションH、Pを基準に往動時に走査するハロゲンランプからなる光源211および反射鏡212を有する第1光学系21、光源211により照射され原稿面で反射された原稿像を像形成部3に導く複数の反射鏡221、222を有する第2光学系22、上記原稿像を感光体ドラム31面に結像させるレンズ23、第1、第2光学系21、22を往復方向（図2中に、矢印で示す）にガイドする一対のガイドレール24、および第1、第2光学系21、22をガイドレール24に沿ってそれぞれ所定速度で走行させる図略の駆動手段を備えている。反射鏡223はレンズ23を通過した原稿像を感光体ドラム31の露光位置に導くものである。

【0011】光源211からの光は、コンタクトガラス

上にセットされた原稿に向けて照射され、原稿面で反射されて原稿像を得る。この原稿像は、図中、一点鎖線で示すように反射鏡212、221、222で反射され、レンズ23を経た後、反射鏡223を介して感光体ドラム31の露光位置に導かれる。

【0012】像形成部3は、図略の駆動手段によって時計方向に定速回転される感光体ドラム31を備えるとともに、感光体ドラム31の周囲に、その回転方向の上流側から主帯電部32、現像部33、トナー回収ローラ部34、転写部35、分離部36およびクリーニング部37とを備えている。感光体ドラム31は主帯電部32により表面を均一帯電された後、原稿像が露光されて静電潜像が形成される。この静電潜像は現像部33でトナーを付着されることによって顕在化され、次いで転写部35で転写紙に転写される。トナー像が転写された転写紙は、分離部36で感光体ドラム31から分離された後、後述する定着部46に導かれる。

【0013】用紙搬送機構4は、複写機本体1aの下部位置に着脱可能に設けられ、それぞれ積層状態で所定サイズの転写紙を収納する複数段の給紙カセットCを備えるとともに、搬送方向上流側から転写紙を1枚ずつ送り出す給紙ローラ411、412、給紙された用紙の重送を防止する捌きローラ対421、422、各搬送ローラ対431～434、二次給紙のためのレジストローラ対44を備える。また、感光体ドラム31の下流方向には、一対の回転ローラ451、452間に張架された搬送ベルト45、定着部46、排出ローラ対47、および排紙トレイ48が設けられている。搬送ガイド部40は、捌きローラ対42から給送された用紙を排出ローラ対47まで搬送するためのもので、所要幅を有して対向配置された板状体から構成されている。手差しトレイ49は所要サイズの転写紙をマニュアルでセット可能にするもので、給紙ローラ413及び捌きローラ対423を有してなり、その下流側で搬送ガイド部40と合流している。定着部46は、上側の熱ローラ461と下側の圧ローラ462とからなり、熱ローラ461は内部にヒータが設けられ、圧ローラ462は熱ローラ461側に所要の圧力で押圧されている。

【0014】給紙カセットC、あるいは手差しトレイ49から給紙ローラ411～413によって繰り出された転写紙は、それぞれの搬送ローラ対431～434を経てレジストローラ対44まで給送される。レジストローラ対44まで搬送された転写紙は、光学機構2の露光走査の開始タイミングと同期して二次給紙され、転写部35でトナー像を転写される。トナー像を転写された転写紙は、搬送ベルト45を経て定着部46に搬送され、ここでトナー像が転写紙に定着された後、排出ローラ対47を経て排紙トレイ48に排出される。

【0015】反転機構5は、定着部46と排出ローラ対47との間の搬送ガイド部40の途中であって、図略の

電磁ソレノイドによって水平軸511回りに、転写紙を排出ローラ対47の方向に導く回転位置と、後述の両面ユニット部6の方向に導く回転位置とに切換えられる方向切換え板51を有するとともに、方向切換えされた転写紙を両面ユニット部6に導くべく対向配置された反転用紙ガイド52、反転用紙ガイド52の途中の搬送ローラ対53、および反転用紙ガイド52の下流端に設けられた搬出ローラ対54から構成されている。両面ユニット部6側に方向切換えされた転写紙は、反転用紙ガイド52に沿って下方に搬送され、搬送ローラ対53が設けられた反転用紙ガイド52の湾曲部において、定着部46で形成されたカールが矯正されて可及的に真っ直ぐに戻された状態で搬出ローラ対54に導かれる。

【0016】両面ユニット部6は、転写紙の両面に複写を行うためのもので、ユニット部本体60を有する中間トレイ部7と再給送機構8とから構成されている。中間トレイ部7は、反転されてきた転写紙を載置する用紙ストック板71を備えるとともに、この上方に用紙はたき部72、ニップローラ73、用紙ガイド74、および用紙面上に自重落下して用紙の移送に伴って連れ回りする回転板75を備えている。なお、用紙ガイド74は回転板75の取付け位置の前側のみ設けられ、上部で軸支されて自重、または下方への僅かな付勢力でもって後方に傾斜されて用紙ストック板71上に当接されているもので、搬出ローラ対54から搬出された転写紙を用紙ストック板71の面上にスムーズに案内して、転写紙の先端が回転板75に衝突することによるストックミス防止している。

【0017】また、再給送機構8は、用紙ストック板71の下方に形成され、所定間隔を有して対向配置された板状体からなる再給送ガイド部81を備えるとともに、用紙ストック板71の再給送方向のやや前方側であって、上部周面を一部露出して設けられた再給紙ローラ82、その前方の反転ローラ83、一対の回転ローラ841、842間に張架され、反転ローラ83の周面に接触した状態で再給送方向と逆方向に回転する捌きベルト84、および再給送ガイド部81の適所に所要間隔を置いて配設された再給送ローラ対851～853を有して形成されている。また、捌きベルト84の回転ローラ841と反転ローラ83とが対面する用紙ニップ位置には、可撓性を有するシート体86がユニット部本体60から下方に垂下し、その下端が反転ローラ83に当接した状態で取り付けられている。

【0018】なお、両面ユニット部6は、複写機本体1aから前方側に抜き出し可能に構成されており、この装着位置に、両面ユニットに代えて給紙カセットCを前方側からスライドさせて装填することで、給紙カセットの3段構成とすることも可能となっている。この場合、給紙ローラ411及び捌きローラ対421に相当する部分を給送ユニットとして構成しておき、給紙カセットCの

挿入に先立って、この給送ユニットを装填するようにすればよい。

【0019】搬出ローラ対54から用紙ストック板71上に転写紙が送られてくると、用紙はたき部72が回転して転写紙の後端側（再給送時には先端側）を上方から押さえて残存するカールを強制的に真っ直に規制し、この状態でニップローラ73が再給紙方向に回転して転写紙を反転ローラ83とシート体86間の用紙ニップ位置まで移送してニップ状態の確保と前端揃えとを行う。転写紙の移送状態は回転板75の回転軸に設けられた略10のロータリエンコーダ等で監視されている。この状態で、再給送、すなわち裏面複写動作の開始指示があると、再給紙ローラ82、反転ローラ83および捌きベルト84が回転駆動を開始し、用紙はたき部71による上方からの押圧作用によって最下位の転写紙から順に1枚ずつ繰り出され、再給送ガイド部81を経て搬送ガイド部40と合流する位置まで給送され、合流後は、搬送ローラ対433、レジストローラ対44により感光体ドラム31に導かれる。裏面にトナー像が転写された転写紙は、排出ローラ対47を経て排紙トレイ48に排出される。

【0020】図3は、転写紙カール矯正部の構造を説明する側断面図である。方向切換え板51から両面ユニット部6に転写紙を導く反転用紙ガイド52の途中であって、搬送ローラ対53の個所には、転写紙のカールを矯正するカール矯正部521が形成されている。

【0021】反転用紙ガイド52は、所定間隔を置いて対向配置されたガイド板52a、52bから構成されており、これらガイド板52a、52bには幅方向に所要の間隔で互いに対向して切欠が複数個形成され、これらの切欠から搬送ローラ対52を構成する各対向するローラがそれぞれ押圧接触するようにされている。そして、カール矯正部521は、これらのガイド板52a、52bからなる搬送路を鋭角状に乃至は大きな曲率（円弧状や楕円状）を有して折り曲げた屈曲形状に形成されている。このように転写紙を鋭角状等に屈曲させても、この位置に搬送ローラ対53を備えた構成としたことで、転写紙の正常搬送が確保されるようにしている。

【0022】そして、定着部46でのトナー溶融定着のための熱処理によって、定着部46の位置において下向け、すなわち圧ローラ462側に撓んだ（カールした）転写紙のカールを矯正的に矯正するようにしている。すなわち、転写紙は、反転用紙ガイド52のカール矯正部521に導かれると、転写紙がこの屈曲した両ガイド板52a、52b間を通過することによって、転写紙には、定着部46で生じた転写紙内部の残留応力（転写紙をカールさせる力）と逆方向の力が作用する。その結果、転写紙は、真っ直な状態に戻された状態で、両面ユニット部6に送られる。従って、カールが矯正された転写紙は、両面ユニット部6の中間トレイ71上に送ら

れ、かつ再給紙のための用紙先端に対するニップ動作に対しても、好適にニップ処理が施されるので、転写紙のカールに起因する紙詰まり等の搬送異常を可及的に防止でき、装置の信頼性が向上する。

【0023】なお、搬送ローラ対53はカール矯正部521の屈曲形状の搬送方向中間位置となるように配置してもよいが、本発明は、かかる位置関係に限定されず、屈曲形状の中央よりやや上流側であってもよく、これにより転写紙をカールと逆向きに撓ませた状態で対向するローラで押圧し、かつ搬送の確保ができる。また、このカール矯正用の対向ローラを搬送ローラ対53とは別に設けてもよい。また対向ローラに代えて1個のローラとこのローラ周面に沿う搬送ベルトとからなる構成でもよい。

【0024】また、上記実施形態では中間トレイ部7を両面複写用として説明したが、本発明はこれに限定されず、転写紙の表面に2種類の原稿の画像を転写可能にする中間トレイ部7を備えた画像形成装置にも適用可能である。

【0025】

【発明の効果】請求項1記載の発明によれば、方向切換え手段と中間トレイ部間の再給送路部に搬送手段を設けるとともに、上記再給送路部の上記搬送手段の配設位置に、上記定着部で形成された転写紙のカールと逆方向の屈曲部を形成した構成としたので定着部で形成された転写紙のカールを矯正的に矯正することができるとともに、屈曲部による転写紙搬送の高抵抗にも拘らず、転写紙を屈曲部を円滑に通過させることができる。

【0026】請求項2記載の発明によれば、屈曲部を、所定間隔を置いて対向配置された2枚のガイド板を円弧形状にして形成した構成としたので、この円弧形状を利用して転写紙のカールを矯正することができる。

【図面の簡単な説明】

【図1】本発明に係る転写紙カール矯正装置が適用された複写機の一実施形態を示す全体斜視図である。

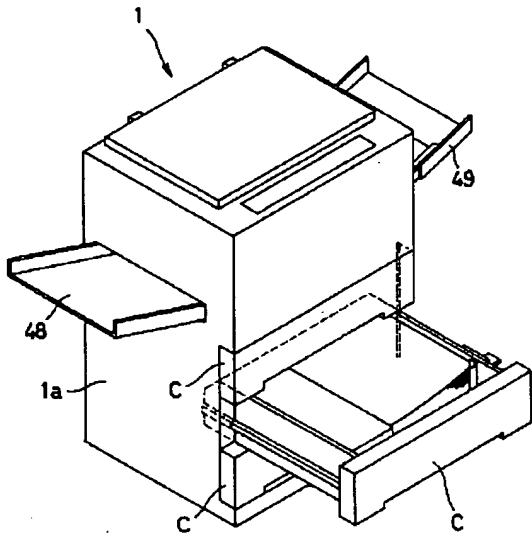
【図2】図1の内部構成図である。

【図3】カール矯正部の構造を説明する側断面図である。

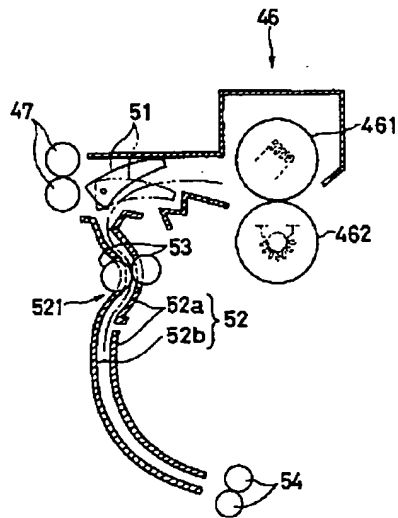
【符号の説明】

- 1 複写機
- 1a 複写機本体
- 46 定着部
- 5 反転機構
- 51 方向切換え板
- 52 用紙反転ガイド
- 52a、52b ガイド板
- 521 カール矯正部（屈曲部）
- 53 搬送ローラ対
- 7 中間ストック部

【図1】



【図3】



【図2】

